SEQUENCE LISTING

<110> Mack, David
      Gish, Kurt
      Wilson, Keith

<120> NOVEL METHODS OF DIAGNOSING CANCER, COMPOSITIONS, AND METHODS OF SCREENING FOR CANCER MODULATORS

<130> A-69192-1/DJB/JJD/AMS

<150> US 09/608,821
<151> 2000-06-30

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<170> PatentIn version 3.0

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gtc tac tat gaa gca ggg att att cta tgc tgt gtc ctg ggg ctg ctg   391
Val Tyr Tyr Glu Ala Gly Ile Ile Leu Cys Cys Val Leu Gly Leu Leu
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Cys Cys Asn Lys Cys Gly Gly Glu Met His Gln Arg Gln Lys Glu Asn
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ggg ccc ttc ctg agg aaa tgc ttt gca atc tcc ctg ttg gtg att tgt        535
Gly Pro Phe Leu Arg Lys Cys Phe Ala Ile Ser Leu Leu Val Ile Cys
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ata ata ata agc att ggc atc ttc tat ggt ttt gtg gca aat cac cag        583
Ile Ile Ile Ser Ile Gly Ile Phe Tyr Gly Phe Val Ala Asn His Gln
                170             175             180

gta aga acc cgg atc aaa agg agt cgg aaa ctg gca gat agc aat ttc        631
Val Arg Thr Arg Ile Lys Arg Ser Arg Lys Leu Ala Asp Ser Asn Phe
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aag gac ttg cga act ctc ttg aat gaa act cca gag caa atc aaa tat        679
Lys Asp Leu Arg Thr Leu Leu Asn Glu Thr Pro Glu Gln Ile Lys Tyr
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ata ttg gcc cag tac aac act acc aag gac aag gcg ttc aca gat ctg        727
Ile Leu Ala Gln Tyr Asn Thr Thr Lys Asp Lys Ala Phe Thr Asp Leu
215             220             225             230

aac agt atc aat tca gtg cta gga ggc gga att ctt gac cga ctg aga        775
Asn Ser Ile Asn Ser Val Leu Gly Gly Gly Ile Leu Asp Arg Leu Arg
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ccc aac atc atc cct gtt ctt gat gag att aag tcc atg gca aca gcg        823
Pro Asn Ile Ile Pro Val Leu Asp Glu Ile Lys Ser Met Ala Thr Ala
                250             255             260

atc aag gag acc aaa gag gcg ttg gag aac atg aac agc acc ttg aag        871
Ile Lys Glu Thr Lys Glu Ala Leu Glu Asn Met Asn Ser Thr Leu Lys
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agc ttg cac caa caa agt aca cag ctt agc agc agt ctg acc agc gtg        919
Ser Leu His Gln Gln Ser Thr Gln Leu Ser Ser Ser Leu Thr Ser Val
        280             285             290

aaa act agc ctg cgg tca tct ctc aat gac cct ctg tgc ttg gtg cat        967
Lys Thr Ser Leu Arg Ser Ser Leu Asn Asp Pro Leu Cys Leu Val His
295             300             305             310

cca tca agt gaa acc tgc aac agc atc aga ttg tct cta agc cag ctg        1015
Pro Ser Ser Glu Thr Cys Asn Ser Ile Arg Leu Ser Leu Ser Gln Leu
            315             320             325

aat agc aac cct gaa ctg agg cag ctt cca ccc gtg gat gca gaa ctt        1063
Asn Ser Asn Pro Glu Leu Arg Gln Leu Pro Pro Val Asp Ala Glu Leu
            330             335             340

gac aac gtt aat aac gtt ctt agg aca gat ttg gat ggc ctg gtc caa        1111
Asp Asn Val Asn Asn Val Leu Arg Thr Asp Leu Asp Gly Leu Val Gln
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cag ggc tat caa tcc ctt aat gat ata cct gac aga gta caa cgc caa        1159
Gln Gly Tyr Gln Ser Leu Asn Asp Ile Pro Asp Arg Val Gln Arg Gln
```

2

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acc acg act gtc gta gca ggt atc aaa agg gtc ttg aat tcc att ggt    1207
Thr Thr Thr Val Val Ala Gly Ile Lys Arg Val Leu Asn Ser Ile Gly
375                     380                385                390

tca gat atc gac aat gta act cag cgt ctt cct att cag gat ata ctc    1255
Ser Asp Ile Asp Asn Val Thr Gln Arg Leu Pro Ile Gln Asp Ile Leu
                    395                400                405

tca gca ttc tct gtt tat gtt aat aac act gaa agt tac atc cac aga    1303
Ser Ala Phe Ser Val Tyr Val Asn Asn Thr Glu Ser Tyr Ile His Arg
            410                415                420

aat tta cct aca ttg gaa gag tat gat tca tac tgg tgg ctg ggt ggc    1351
Asn Leu Pro Thr Leu Glu Glu Tyr Asp Ser Tyr Trp Trp Leu Gly Gly
            425                430                435

ctg gtc atc tgc tct ctg ctg acc ctc atc gtg att ttt tac tac ctg    1399
Leu Val Ile Cys Ser Leu Leu Thr Leu Ile Val Ile Phe Tyr Tyr Leu
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ggc tta ctg tgt ggc gtg tgc ggc tat gac agg cat gcc acc ccg acc    1447
Gly Leu Leu Cys Gly Val Cys Gly Tyr Asp Arg His Ala Thr Pro Thr
455                     460                465                470

acc cga ggc tgt gtc tcc aac acc gga ggc gtc ttc ctc atg gtt gga    1495
Thr Arg Gly Cys Val Ser Asn Thr Gly Gly Val Phe Leu Met Val Gly
                    475                480                485

gtt gga tta agt ttc ctc ttt tgc tgg ata ttg atg atc att gtg gtt    1543
Val Gly Leu Ser Phe Leu Phe Cys Trp Ile Leu Met Ile Ile Val Val
                490                495                500

ctt acc ttt gtc ttt ggt gca aat gtg gaa aaa ctg atc tgt gaa cct    1591
Leu Thr Phe Val Phe Gly Ala Asn Val Glu Lys Leu Ile Cys Glu Pro
            505                510                515

tac acg agc aag gaa tta ttc cgg gtt ttg gat aca ccc tac tta cta    1639
Tyr Thr Ser Lys Glu Leu Phe Arg Val Leu Asp Thr Pro Tyr Leu Leu
            520                525                530

aat gaa gac tgg gaa tac tat ctc tct ggg aag cta ttt aat aaa tca    1687
Asn Glu Asp Trp Glu Tyr Tyr Leu Ser Gly Lys Leu Phe Asn Lys Ser
535                     540                545                550

aaa atg aag ctc act ttt gaa caa gtt tac agt gac tgc aaa aaa aat    1735
Lys Met Lys Leu Thr Phe Glu Gln Val Tyr Ser Asp Cys Lys Lys Asn
                555                560                565

aga ggc act tac ggc act ctt cac ctg cag aac agc ttc aat atc agt    1783
Arg Gly Thr Tyr Gly Thr Leu His Leu Gln Asn Ser Phe Asn Ile Ser
                570                575                580

gaa cat ctc aac att aat gag cat act gga agc ata agc agt gaa ttg    1831
Glu His Leu Asn Ile Asn Glu His Thr Gly Ser Ile Ser Ser Glu Leu
            585                590                595

gaa agt ctg aag gta aat ctt aat atc ttt ctg ttg ggt gca gca gga    1879
Glu Ser Leu Lys Val Asn Leu Asn Ile Phe Leu Leu Gly Ala Ala Gly
600                     605                610
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3

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aga aaa aac ctt cag gat ttt gct gct tgt gga ata gac aga atg aat    1927
Arg Lys Asn Leu Gln Asp Phe Ala Ala Cys Gly Ile Asp Arg Met Asn
615                 620             625                 630

tat gac agc tac ttg gct cag act ggt aaa tcc ccc gca gga gtg aat    1975
Tyr Asp Ser Tyr Leu Ala Gln Thr Gly Lys Ser Pro Ala Gly Val Asn
                635             640                 645

ctt tta tca ttt gca tat gat cta gaa gca aaa gca aac agt ttg ccc    2023
Leu Leu Ser Phe Ala Tyr Asp Leu Glu Ala Lys Ala Asn Ser Leu Pro
            650             655                 660

cca gga aat ttg agg aac tcc ctg aaa aga gat gca caa act att aaa    2071
Pro Gly Asn Leu Arg Asn Ser Leu Lys Arg Asp Ala Gln Thr Ile Lys
            665             670                 675

aca att cac cag caa cga gtc ctt cct ata gaa caa tca ctg agc act    2119
Thr Ile His Gln Gln Arg Val Leu Pro Ile Glu Gln Ser Leu Ser Thr
        680             685                 690

cta tac caa agc gtc aag ata ctt caa cgc aca ggg aat gga ttg ttg    2167
Leu Tyr Gln Ser Val Lys Ile Leu Gln Arg Thr Gly Asn Gly Leu Leu
695                 700             705                 710

gag aga gta act agg att cta gct tct ctg gat ttt gct cag aac ttc    2215
Glu Arg Val Thr Arg Ile Leu Ala Ser Leu Asp Phe Ala Gln Asn Phe
            715             720                 725

atc aca aac aat act tcc tct gtt att att gag gaa act aag aag tat    2263
Ile Thr Asn Asn Thr Ser Ser Val Ile Ile Glu Glu Thr Lys Lys Tyr
            730             735                 740

ggg aga aca ata ata gga tat ttt gaa cat tat ctg cag tgg atc gag    2311
Gly Arg Thr Ile Ile Gly Tyr Phe Glu His Tyr Leu Gln Trp Ile Glu
        745             750             755

ttc tct atc agt gag aaa gtg gca tcg tgc aaa cct gtg gcc acc gct    2359
Phe Ser Ile Ser Glu Lys Val Ala Ser Cys Lys Pro Val Ala Thr Ala
        760             765             770

cta gat act gct gtt gat gtc ttt ctg tgt agc tac att atc gac ccc    2407
Leu Asp Thr Ala Val Asp Val Phe Leu Cys Ser Tyr Ile Ile Asp Pro
775             780             785                 790

ttg aat ttg ttt tgg ttt ggc ata gga aaa gct act gta ttt tta ctt    2455
Leu Asn Leu Phe Trp Phe Gly Ile Gly Lys Ala Thr Val Phe Leu Leu
            795             800             805

ccg gct cta att ttt gcg gta aaa ctg gct aag tac tat cgt cga atg    2503
Pro Ala Leu Ile Phe Ala Val Lys Leu Ala Lys Tyr Tyr Arg Arg Met
            810             815             820

gat tcg gag gac gtg tac gat gat gtt gaa act ata ccc atg aaa aat    2551
Asp Ser Glu Asp Val Tyr Asp Asp Val Glu Thr Ile Pro Met Lys Asn
        825             830             835

atg gaa aat ggt aat aat ggt tat cat aaa gat cat gta tat ggt att    2599
Met Glu Asn Gly Asn Asn Gly Tyr His Lys Asp His Val Tyr Gly Ile
        840             845             850
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4

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cac aat cct gtt atg aca agc cca tca caa cat tga tagctgatgt        2645
His Asn Pro Val Met Thr Ser Pro Ser Gln His
855              860              865

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Ser Phe Ser Gly Gly Gln Pro Ser Ser Thr Asp Ala Pro Lys Ala Trp
            20                  25                  30


Asn Tyr Glu Leu Pro Ala Thr Asn Tyr Glu Thr Gln Asp Ser His Lys
```

5

Ala Gly Pro Ile Gly Ile Leu Phe Glu Leu Val His Ile Phe Leu Tyr
    50   55   60

Val Val Gln Pro Arg Asp Phe Pro Glu Asp Thr Leu Arg Lys Phe Leu
65   70   75   80

Gln Lys Ala Tyr Glu Ser Lys Ile Asp Tyr Asp Lys Pro Glu Thr Val
      85   90   95

Ile Leu Gly Leu Lys Ile Val Tyr Tyr Glu Ala Gly Ile Ile Leu Cys
      100   105   110

Cys Val Leu Gly Leu Leu Phe Ile Ile Leu Met Pro Leu Val Gly Tyr
      115   120   125

Phe Phe Cys Met Cys Arg Cys Cys Asn Lys Cys Gly Gly Glu Met His
      130   135   140

Gln Arg Gln Lys Glu Asn Gly Pro Phe Leu Arg Lys Cys Phe Ala Ile
145   150   155   160

Ser Leu Leu Val Ile Cys Ile Ile Ile Ser Ile Gly Ile Phe Tyr Gly
      165   170   175

Phe Val Ala Asn His Gln Val Arg Thr Arg Ile Lys Arg Ser Arg Lys
      180   185   190

Leu Ala Asp Ser Asn Phe Lys Asp Leu Arg Thr Leu Leu Asn Glu Thr
      195   200   205

Pro Glu Gln Ile Lys Tyr Ile Leu Ala Gln Tyr Asn Thr Thr Lys Asp
      210   215   220

Lys Ala Phe Thr Asp Leu Asn Ser Ile Asn Ser Val Leu Gly Gly Gly
225   230   235   240

Ile Leu Asp Arg Leu Arg Pro Asn Ile Ile Pro Val Leu Asp Glu Ile
      245   250   255

Lys Ser Met Ala Thr Ala Ile Lys Glu Thr Lys Glu Ala Leu Glu Asn
      260   265   270

Met Asn Ser Thr Leu Lys Ser Leu His Gln Gln Ser Thr Gln Leu Ser
      275   280   285

```
Ser Ser Leu Thr Ser Val Lys Thr Ser Leu Arg Ser Ser Leu Asn Asp
    290             295             300
```

```
Pro Leu Cys Leu Val His Pro Ser Ser Glu Thr Cys Asn Ser Ile Arg
305             310             315                 320
```

```
Leu Ser Leu Ser Gln Leu Asn Ser Asn Pro Glu Leu Arg Gln Leu Pro
                325             330             335
```

```
Pro Val Asp Ala Glu Leu Asp Asn Val Asn Asn Val Leu Arg Thr Asp
            340             345             350
```

```
Leu Asp Gly Leu Val Gln Gln Gly Tyr Gln Ser Leu Asn Asp Ile Pro
        355             360             365
```

```
Asp Arg Val Gln Arg Gln Thr Thr Thr Val Val Ala Gly Ile Lys Arg
    370             375             380
```

```
Val Leu Asn Ser Ile Gly Ser Asp Ile Asp Asn Val Thr Gln Arg Leu
385             390             395                 400
```

```
Pro Ile Gln Asp Ile Leu Ser Ala Phe Ser Val Tyr Val Asn Asn Thr
            405             410             415
```

```
Glu Ser Tyr Ile His Arg Asn Leu Pro Thr Leu Glu Glu Tyr Asp Ser
            420             425             430
```

```
Tyr Trp Trp Leu Gly Gly Leu Val Ile Cys Ser Leu Leu Thr Leu Ile
        435             440             445
```

```
Val Ile Phe Tyr Tyr Leu Gly Leu Leu Cys Gly Val Cys Gly Tyr Asp
    450             455             460
```

```
Arg His Ala Thr Pro Thr Thr Arg Gly Cys Val Ser Asn Thr Gly Gly
465             470             475                 480
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```
Val Phe Leu Met Val Gly Val Gly Leu Ser Phe Leu Phe Cys Trp Ile
            485             490             495
```

```
Leu Met Ile Ile Val Val Leu Thr Phe Val Phe Gly Ala Asn Val Glu
            500             505             510
```

```
Lys Leu Ile Cys Glu Pro Tyr Thr Ser Lys Glu Leu Phe Arg Val Leu
        515             520             525
```

7

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Asp Thr Pro Tyr Leu Leu Asn Glu Asp Trp Glu Tyr Tyr Leu Ser Gly
    530             535             540

Lys Leu Phe Asn Lys Ser Lys Met Lys Leu Thr Phe Glu Gln Val Tyr
545             550             555                 560

Ser Asp Cys Lys Lys Asn Arg Gly Thr Tyr Gly Thr Leu His Leu Gln
            565             570                 575

Asn Ser Phe Asn Ile Ser Glu His Leu Asn Ile Asn Glu His Thr Gly
            580             585                 590

Ser Ile Ser Ser Glu Leu Glu Ser Leu Lys Val Asn Leu Asn Ile Phe
        595             600                 605

Leu Leu Gly Ala Ala Gly Arg Lys Asn Leu Gln Asp Phe Ala Ala Cys
    610             615                 620

Gly Ile Asp Arg Met Asn Tyr Asp Ser Tyr Leu Ala Gln Thr Gly Lys
625             630                 635                 640

Ser Pro Ala Gly Val Asn Leu Leu Ser Phe Ala Tyr Asp Leu Glu Ala
                645                 650                 655

Lys Ala Asn Ser Leu Pro Pro Gly Asn Leu Arg Asn Ser Leu Lys Arg
            660             665                 670

Asp Ala Gln Thr Ile Lys Thr Ile His Gln Gln Arg Val Leu Pro Ile
    675             680                 685

Glu Gln Ser Leu Ser Thr Leu Tyr Gln Ser Val Lys Ile Leu Gln Arg
    690             695                 700

Thr Gly Asn Gly Leu Leu Glu Arg Val Thr Arg Ile Leu Ala Ser Leu
705             710             715                 720

Asp Phe Ala Gln Asn Phe Ile Thr Asn Asn Thr Ser Ser Val Ile Ile
            725             730                 735

Glu Glu Thr Lys Lys Tyr Gly Arg Thr Ile Ile Gly Tyr Phe Glu His
            740             745                 750

Tyr Leu Gln Trp Ile Glu Phe Ser Ile Ser Glu Lys Val Ala Ser Cys
    755             760                 765
```

8

```
Lys Pro Val Ala Thr Ala Leu Asp Thr Ala Val Asp Val Phe Leu Cys
    770             775             780
```

```
Ser Tyr Ile Ile Asp Pro Leu Asn Leu Phe Trp Phe Gly Ile Gly Lys
785             790             795             800
```

```
Ala Thr Val Phe Leu Leu Pro Ala Leu Ile Phe Ala Val Lys Leu Ala
            805             810             815
```

```
Lys Tyr Tyr Arg Arg Met Asp Ser Glu Asp Val Tyr Asp Asp Val Glu
        820             825             830
```

```
Thr Ile Pro Met Lys Asn Met Glu Asn Gly Asn Asn Gly Tyr His Lys
        835             840             845
```

```
Asp His Val Tyr Gly Ile His Asn Pro Val Met Thr Ser Pro Ser Gln
    850             855             860
```

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His
865
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                                           Met Ala Leu Val Leu Gly
                                           1                   5
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tcc ctg ttg ctg ctg ggg ctg tgc ggg aac tcc ttt tca gga ggg cag    103
Ser Leu Leu Leu Leu Gly Leu Cys Gly Asn Ser Phe Ser Gly Gly Gln
            10              15              20
```

```
cct tca tcc aca gat gct cct aag gct tgg aat tat gaa ttg cct gca    151
Pro Ser Ser Thr Asp Ala Pro Lys Ala Trp Asn Tyr Glu Leu Pro Ala
        25              30              35
```

```
aca aat tat gag acc caa gac tcc cat aaa gct gga ccc att ggc att    199
Thr Asn Tyr Glu Thr Gln Asp Ser His Lys Ala Gly Pro Ile Gly Ile
    40              45              50
```

```
ctc ttt gaa cta gtg cat atc ttt ctc tat gtg gta cag ccg cgt gat    247
Leu Phe Glu Leu Val His Ile Phe Leu Tyr Val Val Gln Pro Arg Asp
55              60              65              70
```

```
ttc cca gaa gat act ttg aga aaa ttc tta cag aag gca tat gaa tcc    295
Phe Pro Glu Asp Thr Leu Arg Lys Phe Leu Gln Lys Ala Tyr Glu Ser
            75              80              85
```

9

```
aaa att gat tat gac att gtc tac tat gaa gca ggg att att cta tgc       343
Lys Ile Asp Tyr Asp Ile Val Tyr Tyr Glu Ala Gly Ile Ile Leu Cys
            90              95              100

tgt gtc ctg ggg ctg ctg ttt att att ctg atg cct ctg gtg ggg tat       391
Cys Val Leu Gly Leu Leu Phe Ile Ile Leu Met Pro Leu Val Gly Tyr
        105             110             115

ttc ttt tgt atg tgt cgt tgc tgt aac aaa tgt ggt gga gaa atg cac       439
Phe Phe Cys Met Cys Arg Cys Cys Asn Lys Cys Gly Gly Glu Met His
        120             125             130

cag cga cag aag gaa aat ggg ccc ttc ctg agg aaa tgc ttt gca atc       487
Gln Arg Gln Lys Glu Asn Gly Pro Phe Leu Arg Lys Cys Phe Ala Ile
135             140             145             150

tcc ctg ttg gtg att tgt ata ata ata agc att ggc atc ttc tat ggt       535
Ser Leu Leu Val Ile Cys Ile Ile Ile Ser Ile Gly Ile Phe Tyr Gly
            155             160             165

ttt gtg gca aat cac cag gta aga acc cgg atc aaa agg agt cgg aaa       583
Phe Val Ala Asn His Gln Val Arg Thr Arg Ile Lys Arg Ser Arg Lys
            170             175             180

ctg gca gat agc aat ttc aag gac ttg cga act ctc ttg aat gaa act       631
Leu Ala Asp Ser Asn Phe Lys Asp Leu Arg Thr Leu Leu Asn Glu Thr
            185             190             195

cca gag caa atc aaa tat ata ttg gcc cag tac aac act acc aag gac       679
Pro Glu Gln Ile Lys Tyr Ile Leu Ala Gln Tyr Asn Thr Thr Lys Asp
        200             205             210

aag gcg ttc aca gat ctg aac agt atc aat tca gtg cta gga ggc gga       727
Lys Ala Phe Thr Asp Leu Asn Ser Ile Asn Ser Val Leu Gly Gly Gly
215                 220             225             230

att ctt gac cga ctg aga ccc aac atc atc cct gtt ctt gat gag att       775
Ile Leu Asp Arg Leu Arg Pro Asn Ile Ile Pro Val Leu Asp Glu Ile
            235             240             245

aag tcc atg gca aca gcg atc aag gag acc aaa gag gcg ttg gag aac       823
Lys Ser Met Ala Thr Ala Ile Lys Glu Thr Lys Glu Ala Leu Glu Asn
        250             255             260

atg aac agc acc ttg aag agc ttg cac caa caa agt aca cag ctt agc       871
Met Asn Ser Thr Leu Lys Ser Leu His Gln Gln Ser Thr Gln Leu Ser
        265             270             275

agc agt ctg acc agc gtg aaa act agc ctg cgg tca tct ctc aat gac       919
Ser Ser Leu Thr Ser Val Lys Thr Ser Leu Arg Ser Ser Leu Asn Asp
        280             285             290

cct ctg tgc ttg gtg cat cca tca agt gaa acc tgc aac agc atc aga       967
Pro Leu Cys Leu Val His Pro Ser Ser Glu Thr Cys Asn Ser Ile Arg
295             300             305             310

ttg tct cta agc cag ctg aat agc aac cct gaa ctg agg cag ctt cca      1015
Leu Ser Leu Ser Gln Leu Asn Ser Asn Pro Glu Leu Arg Gln Leu Pro
            315             320             325
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10

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ccc gtg gat gca gaa ctt gac aac gtt aat aac gtt ctt agg aca gat        1063
Pro Val Asp Ala Glu Leu Asp Asn Val Asn Asn Val Leu Arg Thr Asp
            330                 335                 340

ttg gat ggc ctg gtc caa cag ggc tat caa tcc ctt aat gat ata cct        1111
Leu Asp Gly Leu Val Gln Gln Gly Tyr Gln Ser Leu Asn Asp Ile Pro
            345                 350                 355

gac aga gta caa cgc caa acc acg act gtc gta gca ggt atc aaa agg        1159
Asp Arg Val Gln Arg Gln Thr Thr Thr Val Val Ala Gly Ile Lys Arg
            360                 365                 370

gtc ttg aat tcc att ggt tca gat atc gac aat gta act cag cgt ctt        1207
Val Leu Asn Ser Ile Gly Ser Asp Ile Asp Asn Val Thr Gln Arg Leu
375                 380                 385                 390

cct att cag gat ata ctc tca gca ttc tct gtt tat gtt aat aac act        1255
Pro Ile Gln Asp Ile Leu Ser Ala Phe Ser Val Tyr Val Asn Asn Thr
            395                 400                 405

gaa agt tac atc cac aga aat tta cct aca ttg gaa gag tat gat tca        1303
Glu Ser Tyr Ile His Arg Asn Leu Pro Thr Leu Glu Glu Tyr Asp Ser
            410                 415                 420

tac tgg tgg ctg ggt ggc ctg gtc atc tgc tct ctg ctg acc ctc atc        1351
Tyr Trp Trp Leu Gly Gly Leu Val Ile Cys Ser Leu Leu Thr Leu Ile
            425                 430                 435

gtg att ttt tac tac ctg ggc tta ctg tgt ggc gtg tgc ggc tat gac        1399
Val Ile Phe Tyr Tyr Leu Gly Leu Leu Cys Gly Val Cys Gly Tyr Asp
            440                 445                 450

agg cat gcc acc ccg acc acc cga ggc tgt gtc tcc aac acc gga ggc        1447
Arg His Ala Thr Pro Thr Thr Arg Gly Cys Val Ser Asn Thr Gly Gly
455                 460                 465                 470

gtc ttc ctc atg gtt gga gtt gga tta agt ttc ctc ttt tgc tgg ata        1495
Val Phe Leu Met Val Gly Val Gly Leu Ser Phe Leu Phe Cys Trp Ile
            475                 480                 485

ttg atg atc att gtg gtt ctt acc ttt gtc ttt ggt gca aat gtg gaa        1543
Leu Met Ile Ile Val Val Leu Thr Phe Val Phe Gly Ala Asn Val Glu
            490                 495                 500

aaa ctg atc tgt gaa cct tac acg agc aag gaa tta ttc cgg gtt ttg        1591
Lys Leu Ile Cys Glu Pro Tyr Thr Ser Lys Glu Leu Phe Arg Val Leu
            505                 510                 515

gat aca ccc tac tta cta aat gaa gac tgg gaa tac tat ctc tct ggg        1639
Asp Thr Pro Tyr Leu Leu Asn Glu Asp Trp Glu Tyr Tyr Leu Ser Gly
            520                 525                 530

aag cta ttt aat aaa tca aaa atg aag ctc act ttt gaa caa gtt tac        1687
Lys Leu Phe Asn Lys Ser Lys Met Lys Leu Thr Phe Glu Gln Val Tyr
535                 540                 545                 550

agt gac tgc aaa aaa aat aga ggc act tac ggc act ctt cac ctg cag        1735
Ser Asp Cys Lys Lys Asn Arg Gly Thr Tyr Gly Thr Leu His Leu Gln
            555                 560                 565

aac agc ttc aat atc agt gaa cat ctc aac att aat gag cat act gga        1783
Asn Ser Phe Asn Ile Ser Glu His Leu Asn Ile Asn Glu His Thr Gly
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Asn Ser Phe Asn Ile Ser Glu His Leu Asn Ile Asn Glu His Thr Gly
            570                 575                 580

agc ata agc agt gaa ttg gaa agt ctg aag gta aat ctt aat atc ttt     1831
Ser Ile Ser Ser Glu Leu Glu Ser Leu Lys Val Asn Leu Asn Ile Phe
            585                 590                 595

ctg ttg ggt gca gca gga aga aaa aac ctt cag gat ttt gct gct tgt     1879
Leu Leu Gly Ala Ala Gly Arg Lys Asn Leu Gln Asp Phe Ala Ala Cys
            600                 605                 610

gga ata gac aga atg aat tat gac agc tac ttg gct cag act ggt aaa     1927
Gly Ile Asp Arg Met Asn Tyr Asp Ser Tyr Leu Ala Gln Thr Gly Lys
615                 620                 625                 630

tcc ccc gca gga gtg aat ctt tta tca ttt gca tat gat cta gaa gca     1975
Ser Pro Ala Gly Val Asn Leu Leu Ser Phe Ala Tyr Asp Leu Glu Ala
                635                 640                 645

aaa gca aac agt ttg ccc cca gga aat ttg agg aac tcc ctg aaa aga     2023
Lys Ala Asn Ser Leu Pro Pro Gly Asn Leu Arg Asn Ser Leu Lys Arg
            650                 655                 660

gat gca caa act att aaa aca att cac cag caa cga gtc ctt cct ata     2071
Asp Ala Gln Thr Ile Lys Thr Ile His Gln Gln Arg Val Leu Pro Ile
            665                 670                 675

gaa caa tca ctg agc act cta tac caa agc gtc aag ata ctt caa cgc     2119
Glu Gln Ser Leu Ser Thr Leu Tyr Gln Ser Val Lys Ile Leu Gln Arg
            680                 685                 690

aca ggg aat gga ttg ttg gag aga gta act agg att cta gct tct ctg     2167
Thr Gly Asn Gly Leu Leu Glu Arg Val Thr Arg Ile Leu Ala Ser Leu
695                 700                 705                 710

gat ttt gct cag aac ttc atc aca aac aat act tcc tct gtt att att     2215
Asp Phe Ala Gln Asn Phe Ile Thr Asn Asn Thr Ser Ser Val Ile Ile
            715                 720                 725

gag gaa act aag aag tat ggg aga aca ata ata gga tat ttt gaa cat     2263
Glu Glu Thr Lys Lys Tyr Gly Arg Thr Ile Ile Gly Tyr Phe Glu His
            730                 735                 740

tat ctg cag tgg atc gag ttc tct atc agt gag aaa gtg gca tcg tgc     2311
Tyr Leu Gln Trp Ile Glu Phe Ser Ile Ser Glu Lys Val Ala Ser Cys
            745                 750                 755

aaa cct gtg gcc acc gct cta gat act gct gtt gat gtc ttt ctg tgt     2359
Lys Pro Val Ala Thr Ala Leu Asp Thr Ala Val Asp Val Phe Leu Cys
            760                 765                 770

agc tac att atc gac ccc ttg aat ttg ttt tgg ttt ggc ata gga aaa     2407
Ser Tyr Ile Ile Asp Pro Leu Asn Leu Phe Trp Phe Gly Ile Gly Lys
775                 780                 785                 790

gct act gta ttt tta ctt ccg gct cta att ttt gcg gta aaa ctg gct     2455
Ala Thr Val Phe Leu Leu Pro Ala Leu Ile Phe Ala Val Lys Leu Ala
            795                 800                 805

aag tac tat cgt cga atg gat tcg gag gac gtg tac gat gat gtt gaa     2503
Lys Tyr Tyr Arg Arg Met Asp Ser Glu Asp Val Tyr Asp Asp Val Glu
```

12

```
act ata ccc atg aaa aat atg gaa aat ggt aat aat ggt tat cat aaa    2551
Thr Ile Pro Met Lys Asn Met Glu Asn Gly Asn Asn Gly Tyr His Lys
        825                 830                 835

gat cat gta tat ggt att cac aat cct gtt atg aca agc cca tca caa    2599
Asp His Val Tyr Gly Ile His Asn Pro Val Met Thr Ser Pro Ser Gln
        840                 845                 850

cat tga tagctgatgt tgaaactgct tgagcatcag gatactcaaa gtggaaagga    2655
His
855

tcacagattt ttggtagttt ctgggtctac aaggactttc caaatccagg agcaacgcca    2715

gtggcaacgt agtgactcag gcgggcacca aggcaacggc accattggtc tctgggtagt    2775

gctttaagaa tgaacacaat cacgttatag tccatggtcc atcactattc aaggatgact    2835

ccctcccttc ctgtctattt ttgttttta ctttttaca ctgagtttct atttagacac    2895

tacaacatat ggggtgtttg ttcccattgg atgcatttct atcaaaactc tatcaaatgt    2955

gatggctaga ttctaacata ttgccatgtg tggagtgtgc tgaacacaca ccagtttaca    3015

ggaaagatgc attttgtgta cagtaaacgg tgtatatacc ttttgttacc acagagtttt   ·3075

ttaaacaaat gagtattata ggactttctt ctaaatgagc taaataagtc accattgact    3135

tcttggtgct gttgaaaata atccattttc actaaaagtg tgtgaaacct acagcatatt    3195

cttcacgcag agattttcat ctattatact ttatcaaaga ttggccatgt tccacttgga    3255

aatggcatgc aaaagccatc atagagaaac ctgcgtaact ccatctgaca aattcaaaag    3315

agagagagag atcttgagag agaaatgctg ttcgttcaaa agtggagttg ttttaacaga    3375

tgccaattac ggtgtacagt ttaacagagt tttctgttgc attaggataa acattaattg    3435

gagtgcagct aacatgagta tcatcagact agtatcaagt gttctaaaat gaaatatgag    3495

aagatcctgt cacaattctt agatctggtg tccagcatgg atgaaacctt tgagtttggt    3555

ccctaaattt gcatgaaagc acaaggtaaa tattcatttg cttcaggagt ttcatgttgg    3615

atctgtcatt atcaaaagtg atcagcaatg aagaactggt cggacaaaat ttaacgttga    3675

tgtaatggaa ttccagatgt aggcattccc cccaggtctt ttcatgtgca gattgcagtt    3735

ctgattcatt tgaataaaaa ggaacttgg    3764
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<210>  4
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<212>  PRT
<213>  Homo sapiens

<400>  4

Met Ala Leu Val Leu Gly Ser Leu Leu Leu Leu Gly Leu Cys Gly Asn
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Ser Phe Ser Gly Gly Gln Pro Ser Ser Thr Asp Ala Pro Lys Ala Trp
　　　　　　20　　　　　　　　　25　　　　　　　　30

Asn Tyr Glu Leu Pro Ala Thr Asn Tyr Glu Thr Gln Asp Ser His Lys
　　　　35　　　　　　　　40　　　　　　　　45

Ala Gly Pro Ile Gly Ile Leu Phe Glu Leu Val His Ile Phe Leu Tyr
　　50　　　　　　　　55　　　　　　　　60

Val Val Gln Pro Arg Asp Phe Pro Glu Asp Thr Leu Arg Lys Phe Leu
65　　　　　　　70　　　　　　　75　　　　　　　　　80

Gln Lys Ala Tyr Glu Ser Lys Ile Asp Tyr Asp Ile Val Tyr Tyr Glu
　　　　　　85　　　　　　　　90　　　　　　　　95

Ala Gly Ile Ile Leu Cys Cys Val Leu Gly Leu Leu Phe Ile Ile Leu
　　　　　100　　　　　　　105　　　　　　　110

Met Pro Leu Val Gly Tyr Phe Phe Cys Met Cys Arg Cys Cys Asn Lys
　　　115　　　　　　　120　　　　　　　125

Cys Gly Gly Glu Met His Gln Arg Gln Lys Glu Asn Gly Pro Phe Leu
　　　130　　　　　　　135　　　　　　　140

Arg Lys Cys Phe Ala Ile Ser Leu Leu Val Ile Cys Ile Ile Ile Ser
145　　　　　　　150　　　　　　　155　　　　　　　160

Ile Gly Ile Phe Tyr Gly Phe Val Ala Asn His Gln Val Arg Thr Arg
　　　　　　165　　　　　　　170　　　　　　　175

Ile Lys Arg Ser Arg Lys Leu Ala Asp Ser Asn Phe Lys Asp Leu Arg
　　　　　　180　　　　　　　185　　　　　　　190

Thr Leu Leu Asn Glu Thr Pro Glu Gln Ile Lys Tyr Ile Leu Ala Gln
　　　195　　　　　　　200　　　　　　　205

Tyr Asn Thr Thr Lys Asp Lys Ala Phe Thr Asp Leu Asn Ser Ile Asn
　　　210　　　　　　　215　　　　　　　220

Ser Val Leu Gly Gly Gly Ile Leu Asp Arg Leu Arg Pro Asn Ile Ile
225　　　　　　　230　　　　　　　235　　　　　　　240

Pro Val Leu Asp Glu Ile Lys Ser Met Ala Thr Ala Ile Lys Glu Thr
　　　245　　　　　　　250　　　　　　　255

14

```
Lys Glu Ala Leu Glu Asn Met Asn Ser Thr Leu Lys Ser Leu His Gln
            260                 265             270


Gln Ser Thr Gln Leu Ser Ser Ser Leu Thr Ser Val Lys Thr Ser Leu
            275                 280             285


Arg Ser Ser Leu Asn Asp Pro Leu Cys Leu Val His Pro Ser Ser Glu
            290                 295             300


Thr Cys Asn Ser Ile Arg Leu Ser Leu Ser Gln Leu Asn Ser Asn Pro
305                 310                 315                 320


Glu Leu Arg Gln Leu Pro Pro Val Asp Ala Glu Leu Asp Asn Val Asn
                325                 330                 335


Asn Val Leu Arg Thr Asp Leu Asp Gly Leu Val Gln Gln Gly Tyr Gln
            340                 345                 350


Ser Leu Asn Asp Ile Pro Asp Arg Val Gln Arg Gln Thr Thr Thr Val
            355                 360                 365


Val Ala Gly Ile Lys Arg Val Leu Asn Ser Ile Gly Ser Asp Ile Asp
    370                 375                 380


Asn Val Thr Gln Arg Leu Pro Ile Gln Asp Ile Leu Ser Ala Phe Ser
385                 390                 395                 400


Val Tyr Val Asn Asn Thr Glu Ser Tyr Ile His Arg Asn Leu Pro Thr
                405                 410                 415


Leu Glu Glu Tyr Asp Ser Tyr Trp Trp Leu Gly Gly Leu Val Ile Cys
            420         .       425                 430


Ser Leu Leu Thr Leu Ile Val Ile Phe Tyr Tyr Leu Gly Leu Leu Cys
            435                 440                 445


Gly Val Cys Gly Tyr Asp Arg His Ala Thr Pro Thr Thr Arg Gly Cys
    450                 455                 460


Val Ser Asn Thr Gly Gly Val Phe Leu Met Val Gly Val Gly Leu Ser
465                 470                 475                 480


Phe Leu Phe Cys Trp Ile Leu Met Ile Ile Val Val Leu Thr Phe Val
            485                 490                 495
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15

Phe Gly Ala Asn Val Glu Lys Leu Ile Cys Glu Pro Tyr Thr Ser Lys
          500   505   510

Glu Leu Phe Arg Val Leu Asp Thr Pro Tyr Leu Leu Asn Glu Asp Trp
          515   520   525

Glu Tyr Tyr Leu Ser Gly Lys Leu Phe Asn Lys Ser Lys Met Lys Leu
    530   535   540

Thr Phe Glu Gln Val Tyr Ser Asp Cys Lys Lys Asn Arg Gly Thr Tyr
545   550   555   560

Gly Thr Leu His Leu Gln Asn Ser Phe Asn Ile Ser Glu His Leu Asn
              565   570   575

Ile Asn Glu His Thr Gly Ser Ile Ser Ser Glu Leu Glu Ser Leu Lys
          580   585   590

Val Asn Leu Asn Ile Phe Leu Leu Gly Ala Ala Gly Arg Lys Asn Leu
          595   600   605

Gln Asp Phe Ala Ala Cys Gly Ile Asp Arg Met Asn Tyr Asp Ser Tyr
    610   615   620

Leu Ala Gln Thr Gly Lys Ser Pro Ala Gly Val Asn Leu Leu Ser Phe
625   630   635   640

Ala Tyr Asp Leu Glu Ala Lys Ala Asn Ser Leu Pro Pro Gly Asn Leu
              645   650   655

Arg Asn Ser Leu Lys Arg Asp Ala Gln Thr Ile Lys Thr Ile His Gln
              660   665   670

Gln Arg Val Leu Pro Ile Glu Gln Ser Leu Ser Thr Leu Tyr Gln Ser
          675   680   685

Val Lys Ile Leu Gln Arg Thr Gly Asn Gly Leu Leu Glu Arg Val Thr
    690   695   700

Arg Ile Leu Ala Ser Leu Asp Phe Ala Gln Asn Phe Ile Thr Asn Asn
705   710   715   720

Thr Ser Ser Val Ile Ile Glu Glu Thr Lys Lys Tyr Gly Arg Thr Ile
              725   730   735

16

```
Ile Gly Tyr Phe Glu His Tyr Leu Gln Trp Ile Glu Phe Ser Ile Ser
            740                 745             750

Glu Lys Val Ala Ser Cys Lys Pro Val Ala Thr Ala Leu Asp Thr Ala
            755             760             765

Val Asp Val Phe Leu Cys Ser Tyr Ile Ile Asp Pro Leu Asn Leu Phe
            770             775             780

Trp Phe Gly Ile Gly Lys Ala Thr Val Phe Leu Leu Pro Ala Leu Ile
785                 790             795                     800

Phe Ala Val Lys Leu Ala Lys Tyr Tyr Arg Arg Met Asp Ser Glu Asp
                805             810                 815

Val Tyr Asp Asp Val Glu Thr Ile Pro Met Lys Asn Met Glu Asn Gly
            820             825             830

Asn Asn Gly Tyr His Lys Asp His Val Tyr Gly Ile His Asn Pro Val
            835             840             845

Met Thr Ser Pro Ser Gln His
    850             855


<210>   5
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<212>   PRT
<213>   Artificial

<220>
<223>   Extracellular cytokine receptor motif found in many species.

<220>
<221>   UNSURE
<222>   (3)..(3)
<223>   "Xaa" at position 3 can be any amino acid.


<400>   5

Trp Ser Xaa Trp Ser
1                   5
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